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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/060,544	01/30/2002	Naoki Nishi	09792909-5333	8888

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EXAMINER

JELINEK, BRIAN J

ART UNIT PAPER NUMBER

2615

DATE MAILED: 06/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/060,544

Applicant(s)

NISHI, NAOKI

Examiner

Brian Jelinek

Art Unit

2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 May 2005.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-6 and 13-18 is/are allowed.
- 6) ☒ Claim(s) 7-9, and 19-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Response to Amendment

The Examiner respectfully submits a response to the amendment received on 5/13/2005 of application no. 10/060,544 filed on 1/30/2002 in which claims 1-24 are currently pending.

Arguments

The Applicant's arguments have been fully considered but they are not persuasive. Please refer to the following office action, which clearly sets forth the reasons for non-persuasiveness.

The Applicant argues that "Murayama does not disclose that electrodes corresponding to each of the vertical CCD registers are electrically independent from one another and connected to different driving pulse lines". In response, Murayama clearly shows the electrodes corresponding to each of the vertical CCD registers are electrically independent from one another (Fig. 3, elements 10.sub.4 and 10.sub.3), and are connected to different driving pulse lines because "the respective pairs of clock signals are connected to alternating ones of the respective horizontal transfer electrodes" (col. 2, lines 48-50).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 7-9, and 19-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Murayama et al. (U.S. Pat. No. 4,750,042).

Regarding claim 7, Murayama discloses a CCD imaging device (Fig. 1, element 1) comprising: a plurality of photodetecting portions that are arranged two-dimensionally (Fig. 1, element 1); a plurality of vertical CCD registers for transferring, in a vertical direction, signal charges that are output from the respective photodetecting portions (Fig. 1, element 2); and m horizontal CCD registers for transferring, in a horizontal transfer direction, signal charges that have been transferred by the vertical CCD registers (Fig. 1, elements 6 and 7), the m horizontal CCD registers having horizontal transfer electrodes (Fig. 3) in such a manner that a certain number of electrodes are provided so as to correspond to each of the vertical CCD registers (Fig. 3, element 10.sub.4 and 10.sub.3), and more electrodes than the number of electrodes that are provided so as to correspond to each of the vertical CCD registers are independent of each other electrically and connected to different driving pulse lines (col. 4, lines 20-22, four-phase HCCD readout).

Regarding claim 8, Murayama discloses the transfer electrodes that are independent of each other electrically are divided into pairs of transfer electrodes (e.g, 10.sub.3 and 11.sub.3), and wherein each pair of transfer electrodes are drive in phase in a state (Abstract: lines 8-10) that they are given a prescribed voltage difference in such a manner that the potential becomes deeper in the horizontal transfer direction (col. 2, lines 48-53).

Regarding claim 9, Murayama discloses the transfer electrodes of the m horizontal CCD registers (Fig. 3, elements 10 and 11) that correspond to each set of n vertical CCD registers adjacent to each other (col. 2, lines 48-50) can be driven independently of each other electrically (col. 2, lines 44-46), where n is greater than or equal to 2.

Regarding claim 19, please see the rejection of claim 7.

Regarding claim 20, please see the rejection of claim 8.

Regarding claim 21, please see the rejection of claim 9.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10-12, and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murayama et al. (U.S. Pat. No. 4,750,042) in view of Fuji (JP Pub. No. 10-191168).

Please note that Fuji (JP Pub. No. 10-191168) is a foreign application on which Ishigami et al. (U.S. Pat. No. 6,452,634) relies. Consequently, this Office Action references Ishigami et al. as a translation of Fuji.

Regarding claim 10, Murayama discloses in a state that the transfer electrodes that are independent of each other electrically are given prescribed voltage differences in such a manner that the potential becomes deeper in the horizontal transfer direction, a set of transfer electrodes corresponding to each vertical CCD register are driven in phase (col. 2, lines 35-53; Abstract: lines 8-10). Furthermore, Murayama discloses the horizontal CCDs may be driven by any driving system with two, three, or four phases (col. 4, lines 16-23).

Murayama does not disclose two sets of transfer electrodes corresponding to each pair of vertical CCD registers adjacent to each other are driven in opposite phases, whereby signal charges that have been transferred by each pair of vertical CCD registers adjacent to each other are mixed with each other.

However, Ishigami discloses in a state that the four transfer electrodes that are independent of each other electrically (insulated by Fig. 10, element 12) are given prescribed voltage differences in such a manner that the potential becomes deeper in the horizontal transfer direction, a set of four transfer electrodes (Fig. 10, 7W and 7X) corresponding to each vertical CCD register are driven in phase (Fig. 11, ϕ_{H1a} , ϕ_{H2a}) and two sets of four transfer electrodes (Set 1: 7W and 7X; Set 2: 7Y and 7Z) corresponding to each pair of vertical CCD registers adjacent to each other are driven in opposite phases (ϕ_{H1a} vs. ϕ_{H1b} and ϕ_{H2a} vs. ϕ_{H2b}), whereby signal charges that have been transferred by each pair of vertical CCD registers adjacent to each other are mixed with each other (Fig. 10, T3). One of ordinary skill in the art would have provided the driving method of Ishigami in order to enable readout of charge from the horizontal

CCDs in both a normal speed and an N-speed drive (col. 8, lines 44-65). As a result, it would have been obvious to one of ordinary skill in the art at the time of the invention to provided the driving system of Ishigami in order to enable readout of charge from the horizontal CCDs in both a normal speed and an N-speed drive.

Regarding claim 11, Murayama discloses transferring signal charges of each set of n vertical CCD registers. Murayama does not disclose signal charges that have been transferred by each set of n vertical CCD registers adjacent to each other are mixed with each other by driving the m horizontal CCD registers in a prescribed number of phases, the prescribed number being equal to the number of transfer electrodes of the m horizontal CCD registers corresponding to the n vertical CCD registers.

However, Ishigami discloses signal charges that have been transferred by each set of n vertical CCD registers adjacent to each other are mixed with each other (Fig. 10, T3) by driving the horizontal CCD register in $4n$ phases, because each of the four drive signals ($\phi H1a$, $\phi H1b$, $\phi H2a$, and $\phi H2b$) drives two electrodes for a total of eight electrode driving phases. One of ordinary skill in the art would have provided the driving method of Ishigami in order to enable readout of charge from the horizontal CCDs in both a normal speed and an N-speed drive (col. 8, lines 44-65). As a result, it would have been obvious to one of ordinary skill in the art at the time of the invention to provided the driving system of Ishigami in order to enable readout of charge from the horizontal CCD in both a normal speed and an N-speed drive.

Regarding claim 12, Murayama discloses the two horizontal CCDs can be read out by common clocking signals (Abstract, lines 8-10). Murayama does not disclose that signal charges are mixed together.

However, Ishigami discloses in a state that each set of two or more transfer electrodes adjacent to each other (Set 1: 7W and 7X; Set 2: 7Y and 7Z) are supplied with the same voltage or given a prescribed voltage difference in such a manner that the potential becomes deeper in the horizontal transfer direction, the horizontal CCD register is driven in $2n$ phases, whereby signal charges that have been transferred by each set of n vertical CCD registers adjacent to each other are mixed with each other by driving the horizontal CCD register in $2n$ phases because the four drive signals (fH1a, fH1b, fH2a, and fH2b) comprise four electrode pair driving phases. One of ordinary skill in the art would have provided the driving method of Ishigami in order to enable readout of charge from the horizontal CCDs in both a normal speed and an N-speed drive (col. 8, lines 44-65). As a result, it would have been obvious to one of ordinary skill in the art at the time of the invention to provided the driving system of Ishigami in order to enable readout of charge from the horizontal CCD in both a normal speed and an N-speed drive.

Regarding claim 22, please see the rejection of claim 10.

Regarding claim 23, please see the rejection of claim 11.

Regarding claim 24, please see the rejection of claim 12.

Allowable Subject Matter

Claims 1-6, and 13-18 are allowed.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

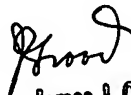
Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Jelinek whose telephone number is (571) 272-7366. The examiner can normally be reached on M-F 8:00 am - 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Groody can be reached at (571) 272-7950. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Brian Jelinek
5/16/2005


James J. Groody
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